210 230 ~ 261 memory Cache 210 controller Channel ,240 (8) 210 controller Information processing apparatus (5) controller Channel Disk (7) (4) 210 controller processing apparatus (4) Information 260 Channel 240 (9) 400 controller ~400 controller Disk (3) Channel processing apparatus(3) Information (2) Host Switch SAN 240 controller Channel controller (4) processing apparatus(2) Information (2)controller 400 400 Channel (3) |controller|210 Information processing apparatus(1) controller Channel Disk (1) (2) controller Channel 240 ~ Shared memory (1)7009 220processor Service 261 200 250 100 **2**9 apparatus(6) Information Information apparatus(7) Information processing apparatus(8) processing processing client system Management

310

310

310

Disk drive

Disk drive

Disk drive

Disk drive

300

(1)

(5)

(3)

(4)

FIG. 2

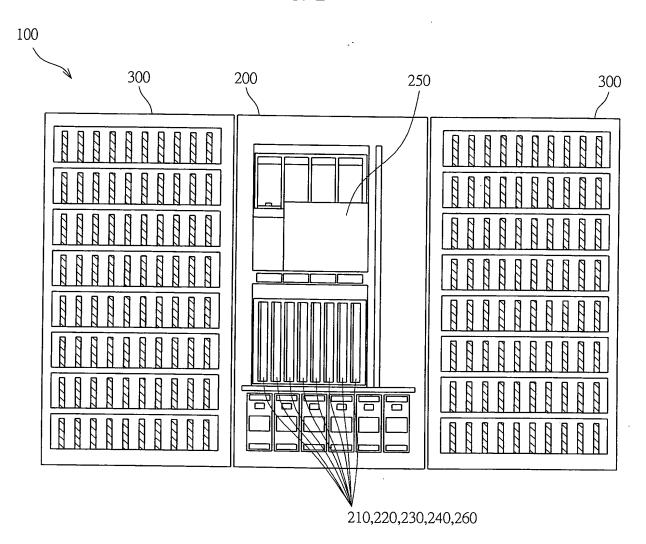


FIG. 3

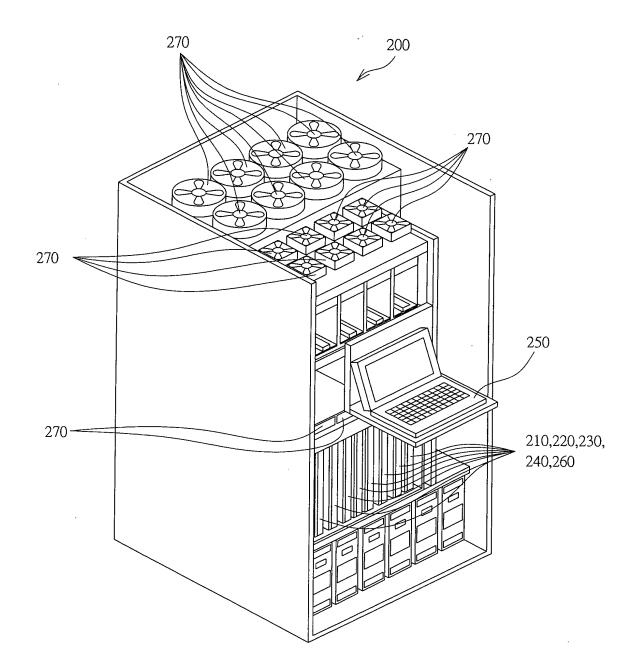


FIG. 4

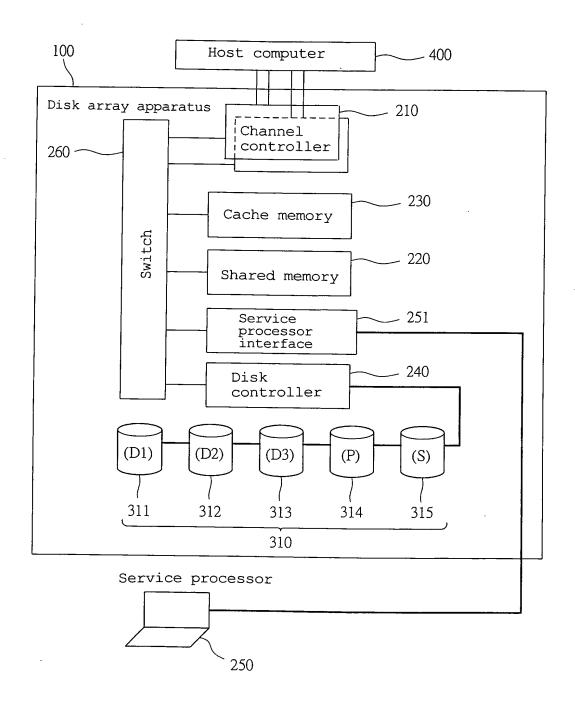


FIG. 5

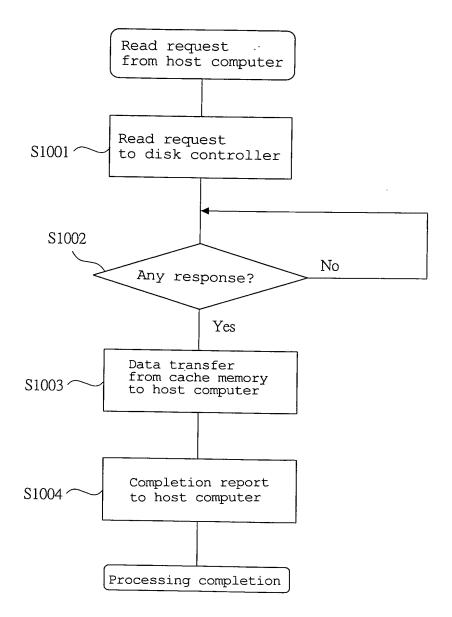


FIG. 6

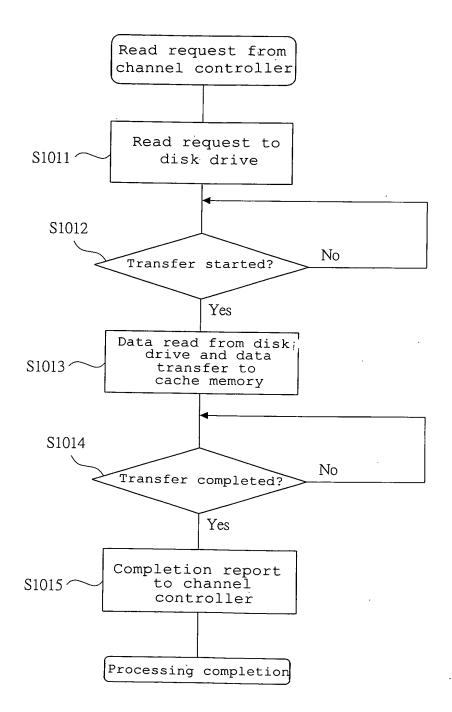


FIG. 7

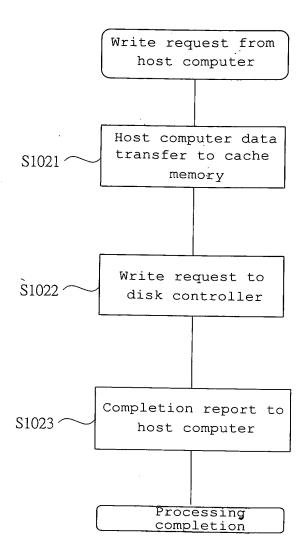


FIG. 8

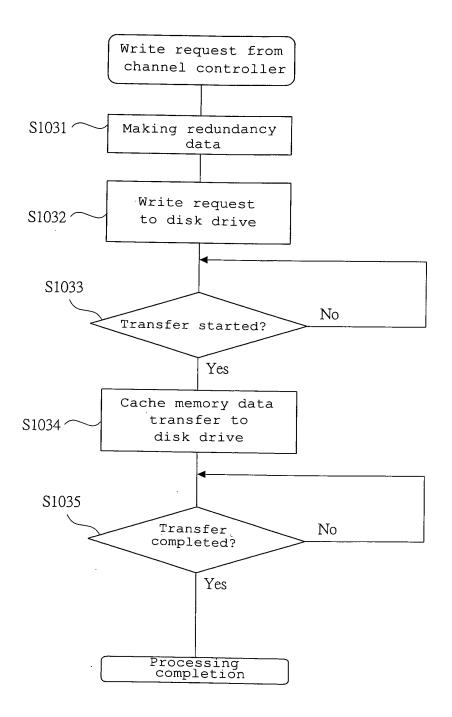


FIG. 9

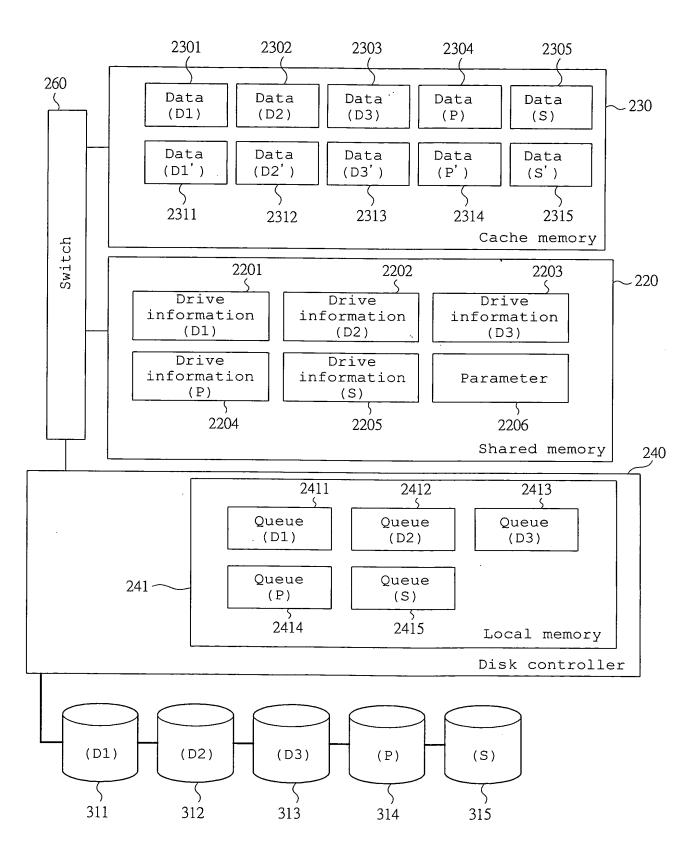


FIG. 10

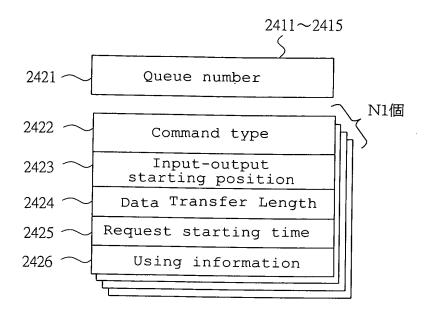


FIG. 11

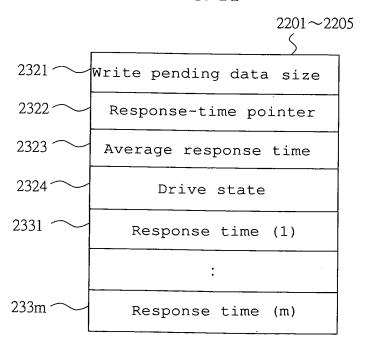


FIG.12

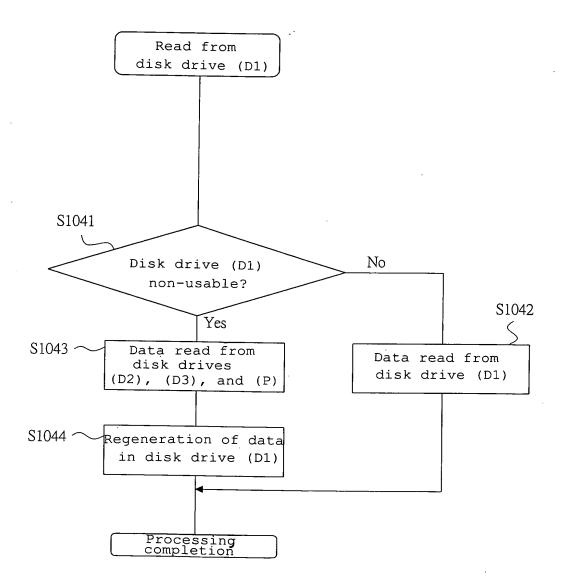


FIG. 13

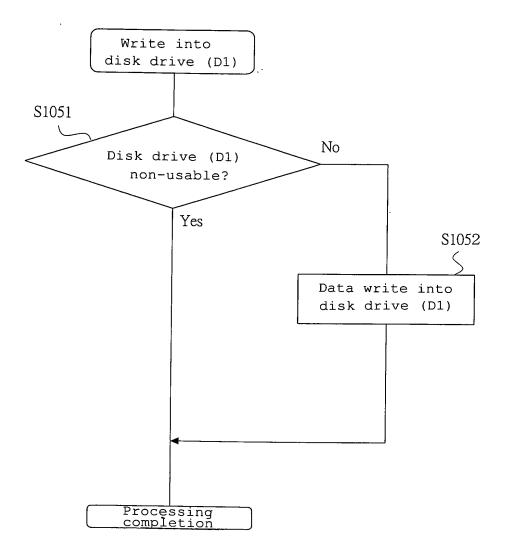


FIG. 14

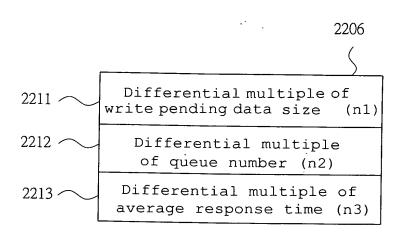


FIG. 15

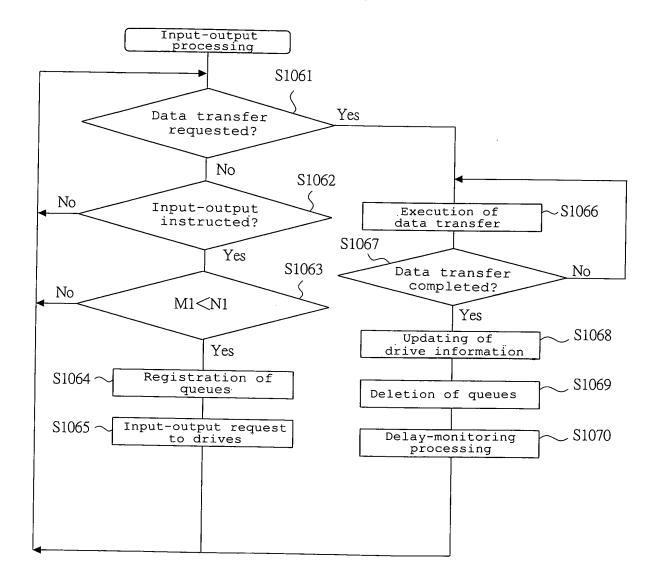


Fig. 16A DD01 DD02 Write pending data size DD01+DD02 Write pending data Fig. 16B DD01 DD02 DD03 Write pending data size DD01+DD02+DD03 Write pending data *Fig.16C* DD01 DD03 Write pending data size DD01+DD03

Write pending data

FIG. 17

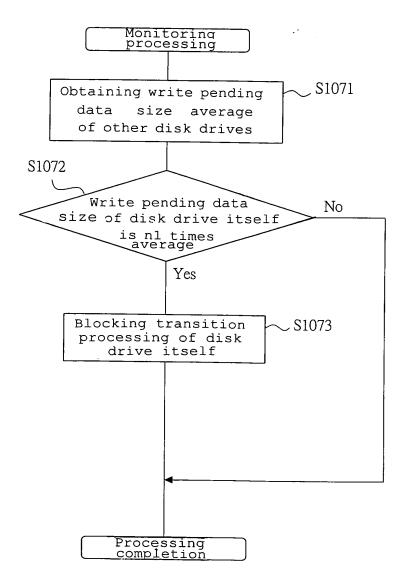


FIG. 18

Detail Close

Causing of performance delay in disk drive (D2)

FIG. 19

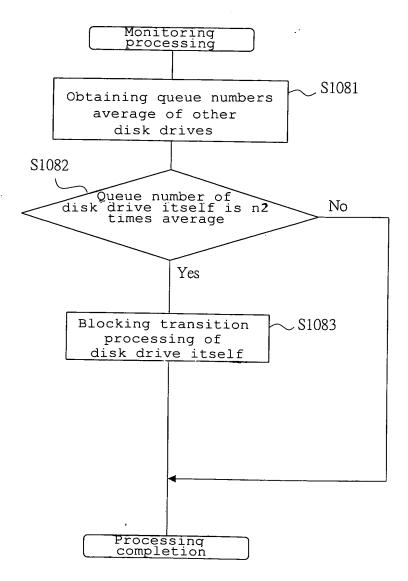


FIG. 20

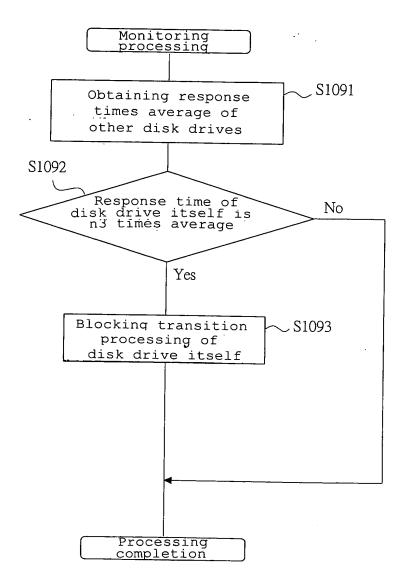


FIG. 21

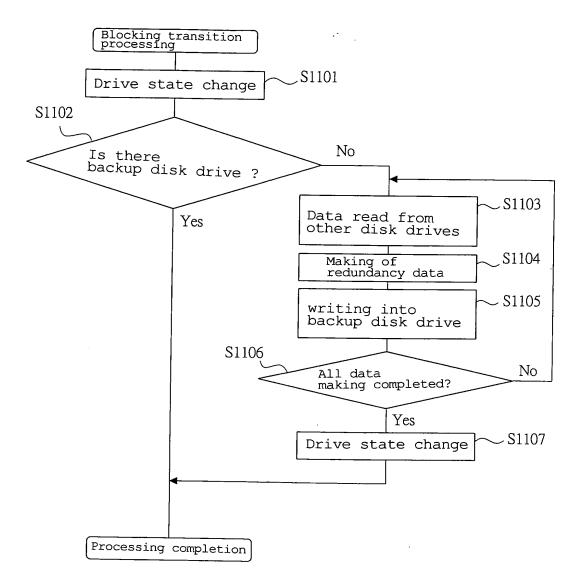


FIG. 22

Performance delay detection level
<pre>A: Easy</pre>

FIG. 23

Level	n1	n2	n3
A	1.2	1.2	1.2
B	1.5	1.5	1.5
C	2.0	2.0	2.0
Custom	Desired value	Desired value	Desired value

FIG. 24

Disk response	time
A: Response time	Fast MIN Normal Normal Slow MAX Yes (1~32) (1~16)
	(,

FIG. 25

Level	M1	Retrying times
A	1	5
В	4	10
C	8	20
Custom	Desired value	Desired value